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# Pricing of Illicit Drugs on Darknet Markets: A Conceptual Exploration

## Abstract

**Introduction:** Trading illicit drugs on cryptomarkets differs in many ways from material retail markets. We aim to contribute to existing studies on pricing by studying the relationship between price changes in relation to changes in nominal value of the cryptocurrency. To this we qualitatively study product descriptions and images to expand the knowledge on price formation.

**Methods:** We analysed 15 samples based on visual and textual scrapes from two major drug markets – for Dream Market between Januar 2014 and July 2015 and for Tochka between Januar 2015 and July 2015. This longitudinal study relates changes in process to variations in the Bitcoin exchange rate and selling strategies. The analysis of the marketing of drugs online also addressed the development of the vendor profile and product offers.

**Results:** Product prices change in relation to variations in the Bitcoin exchange rate. This points to the application of mechanisms for automatic price adaptations on the market level. Real prices of the drug offers constantly increase. We assert that there is a bidirectional relationship. Vendors structure price and discounts to encourage feedback. And feedback in combination with signals of commitment and authenticity inform pricing. Product descriptions are an important feature in the successful marketization of goods, whereas product images are predominantly employed as an aspect of recognisability and feature of the vendor's identity.

**Conclusion:** Findings suggest that there is great potential for further qualitative research into the relationship between the online and offline identity of drug vendors as well as price setting when entering the market and subsequent changes for offered products. They also suggest that further investigation into the constitution and management of vendor's identity on the cryptomarkets would allow a better understanding of vendors and their interactions on cryptomarkets.

## Keywords

Cryptomarkets, Drug dealing, illicit drug markets, Drug vendors, Selling strategy

# **Pricing of Illicit Drugs on Darknet Markets: A Conceptual and Qualitative Exploration**

## **Introduction**

This paper investigates the dynamics of drug pricing on a sample of cryptomarkets markets. We approach pricing as one part of a total product offer which also includes what are in theory quantifiable claims about purity and drug quality, and qualitative image and brand building aspects such as the images and language used about the drug and the vendor. Cryptomarkets are anonymous online platforms for the sale of largely illicit goods and services. They use the darknet, the set of hardware and software systems designed to allow for anonymous browsing and hosting using the internet, combined with cryptocurrencies like Bitcoin (BTC) which allow for decentralised payment. Cryptomarkets are unique in that they can provide a more complete record of drug supply than any other method, allowing for detailed time-series analysis and analysis by product, volume and retail package (Barratt & Aldridge, 2016, Décary-Héту et al 2016). In fact, the amount of information

provided to customers appears to nourish loyalty amongst the vendors' customer base which translates to repeat buying (Décary-Hétu and Quessy-Doré, 2017). Research has estimated the value of drugs for sale on the cryptomarkets, the balance between bulk and retail sales and the emerging role of cryptomarkets in mediating offline drug sales as well as their potential to change consumption patterns ((Aldridge & Décary-Hétu, 2016; Aldridge & Décary-Hétu, 2014; Demant, Munksgaard and Houborg, 2018; Griffiths and Mounteney, 2017).

What we need is a focus on pricing dynamics as both pragmatic decision making in response to dynamics in other parts of the market infrastructure such as the ever-gyrating Bitcoin exchange rate, and strategic decision making by vendors. Pricing in drug markets typically behaves differently to that of the licit retail market. Pricing in offline drug markets is usually given in rounded, highly stepped currency amounts (£20, £50, £80 rather than for example £19.99, £24.99, £35.99). This is due to the need to transact rapidly and predictably and also clearly distinguish between one's customer groupings. It performs a social sorting function. Likewise, we treat pricing data as illuminating a set of social and technical relationships, rather than being a straightforward reflection of buyer desire and supply capacity.

We argue that 'the price signal' is not a simple reflection of market forces but is made up of multiple decisions and system effects by vendors, Bitcoin traders, market administrators, buyers, and law enforcement. Some quantitative and qualitative explorations skillfully ventured into the the characterization of drug vendors on cryptomarkets – bringing much insight but did not touch specifically on pricing (Dolliver & Kenney, 2016; van Hout & Bingham, 2014; Tzanetakis, 2018). Important factors for the formation of drug prices in cryptomarkets are outlined by Aldridge, Stevens and Barratt (2017), often in juxtaposition with offline drug markets. Apart from commissions charged by the cryptomarkets and additional costs for stealth packaging, risk for example posed by law enforcement operations, (reduced) harm is commonly designated as a major factor in the pricing of illicit drugs (Aldridge and Askew, 2017; Décary-Hétu et al 2016; Barratt, Ferris and Winstock, 2016). Also the role of purity of drugs in relation to online and offline drug prices has been fruitfully explored

(van der Gouwe et al 2017). However, we also know that purity is part of a more complex embodied experience on the consumer side (Bancroft and Reid, 2016). An experience which often informs – or materializes in – consumers’ feedback to vendors and the rating. And particularly because vendors operate in a kind of anonymous environment, their survival in the market does not only rely on a competitive price and quality but also on rating and feedback they receive from customers (Hardy and Nordgaard, 2016; Przepiorka et al, 2017). Soska and Christin point out that two factors affecting prices are ‘standard free market pressure’ and the vendor’s strategy ‘to halt sales of an item with the expectation of selling it again in the future’ so that ‘instead of de-listing the item and losing all of the reviews and ratings that have accumulated over time, the vendor instead raises the price to something prohibitively high in order to discourage any sales’ (Soska & Christin, 2015). This pricing strategy is known as ‘holding price’ (ibid.). Crucially, drug prices reflect both market dynamics and the position of the drug vendor in relation to their client base and the risks of illicit trade. Therefore, price is an institutional construct as well as an indicator of supply and demand. It helps us to view illicit markets as performed and productive. They support or make possible various social and economic arrangements.

Cunliff et al (2017) find that in within the Australian online drug market prices are comparable to the ones of drugs being sold offline, on the street. However, prices in on the Australian market are in general significantly higher than in other countries. Analysing this phenomenon in relation to (the perception of) risk, Cunliff et al trace this back to ‘risk tariffs’ that the stringent border inspection entails (2017: 71). Risk as part of the pricing of drugs on cryptomarkets plays out its institutional character. Other forms of risk on cryptomarkets such as exit-scams, rip-offs and arrests have been insightfully explored by existing research (Soska and Christin, 2015). Another source of risk that thwarts assumptions about illicit are law enforcement such as ‘Operation Onymous’ and ‘Operation Hyperion’ targeted many European countries (Mazerolle, Soole, & Rombouts, 2006; Afilipoaie and Shortis, 2015). In a study on the effect of Operation Onymous on major cryptomarkets, Décary-Héту and Giommoni (2017) reveal that the crackdown appeared to have no effect on the prices of the drugs

on sale. The authors surmise that it could have to do with an unchanged perception of risk, the inability to exploit the situation of diminished competition to raise prices or expand control over the market, the commitment to retain customers' loyalty, or change in the shipped product on the side of the vendors. They also showed that in the long-run sale of drugs on cryptomarkets recovered fairly well.

Risk of drug trade on cryptomarkets is also lowered by ever advancing technological features and invitation-only market membership allow market administrators to increase security measures. The acquisition of technical skills to enhance safe interactions on darknet markets are essential for lowering the risk to fall prey to law enforcement interventions and other scams (Kruithof et al, 2016).

Online markets for illicit drugs involve skilled, connected individuals. The bigger online illicit drug markets get, the more competitive they become. This puts increasing emphasis on the retention of customer loyalty through sharp pricing, good sales/distribution technique and supply of information related to the product and shipping.

We were interested in whether product descriptions and images changed and if changes could be related to the change in price. The changes in the product description which aim to signal quality of product and trustworthiness of vendor lie within our purview, too. Besides involvement of law enforcement and stringency of border inspections which vendors cannot actively affect, product quality and trust are the core factors of risk for drug-dealing transactions (Taylor & Potter, 2013; Cunliffe et al, 2017). Such risk can be incorporated in the sales price. The visualisation of the product affects trustworthiness of the vendor and product quality, too. But beyond that it enhances (immediate) recognisability of vendor and product for the potential sellers. This demands skills that

are not used in the street drug market. Since it aims to positively affect sales and, thus, possibly also the price of the good, we also trace the visual presentation of 15 different offers of drugs from the most present vendors and relate them to the changes in price.

Therefore, three questions guided this research:

- (1) How do prices adapt to changes in cryptocurrency?
- (2) How the vendors deploy the visualisation of products and seller identity?
- (3) Do product descriptions change as result of a change in price?

## Methods

We selected 15 cases of different drug offers by vendors most present on the markets, observing them between January 2014 and July 2015. The longitudinal study was based upon Gwern Branwen's vast collection of publicly available scrapes of cryptomarkets which other cryptomarket research has drawn upon too<sup>1</sup>(Branwen, 2016; Ladegaard 2020; Rhumorbarbe et al, 2016). The scrapes, which are static copies of onion-pages taken with the help of a web-crawler software, comprise all onion-pages – that includes sub-pages – of the active cryptomarkets and contain graphic as well as textual content. From the available markets we chose two samples according to the criteria of longevity, security features (multisig, escrow, etc.), up-time<sup>2</sup>, and a clear focus on sales of drugs rather than other products. Weapons and hitman services were a criterion for exclusion. In Gwern's overview of the drugnet markets there's a row which indicates the markets where weapons and hitman services are not allowed. In addition, we intended to have one market which was opened before and one during the period captured by the scrapes – and Operation Onymous. The result was the choice of Dream Market and Tochka. Following Soska and Christin, another criterion for selecting Dream Market and Tochka was the completeness, frequency, instantaneousness, and soundness of the data in order to attain a coherent picture of happenings on the cryptomarkets (2015: 4). For Dream Market scrapes were

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<sup>1</sup> An independent researcher.

<sup>2</sup> Verified on [www.dnstats.net](http://www.dnstats.net)

available since January 2014 and for Tochka since February 2015. For both markets scrapes had been produced on an irregular but neat pattern which varies between one and eight days, but on average circulates around three days. This generated a total of 194,160 files in 980 folders for Dream Market and 8,349 files in 4,045 folders for Tochka. In 2017 Décary-Hétu and Giommoni point out some limitations regarding the quality of the dataset. The tool used by Gwern Branwen did not collect all listings, customer feedback and dealer profiles every time it was run. Following Décary-Hétu and Giommoni way of significantly reducing the unreliability of the dataset we revisited the dataset, and checked the validity of our sampling on the basis of an aggregate perspective. Thereby we looked into each week's container of scrapes to check if the vendors that we selected according to the highest number of occurrences – based on the scrapes - on the respective markets. Also through our longitudinal approach by observing vendors and product listings over a longer period, we further reduce the distortion of our results based on the deficits in the dataset. Finally, at the time of research the data-set by Gwern Branwen was the best and only one available to researches. We ensured that the selected samples are amongst the ones with the most sustained presence – based on the scrapes - on Dream Market and Tochka, respectively.

Dream Market, opened in November 2013, provides escrow function and captcha login. Escrow allows the market administrator to resolve disputes between buyer and seller. Captcha prevents machine logins and protects the market against cyber-attack. In January 2014 Dream Market started to gain sufficient awareness in the darknet market community to attract an increasing number of vendors for the exchange of different sorts of drugs, comprising psychedelics, amphetamines, ketamine and cannabis products. Tochka, on the other hand, went online in January 2015 (Branwen, 2016), which allowed us to additionally follow the technical development and population of the market from the beginning. Whereas the design, visual appearance and web-site structure of Dream Market was already relatively refined, Tochka seemed to keep functionality much simpler.



Since this study meant going through files individually, the most meaningful strategy was starting with taking a sample from every month. Where possible we kept a regular time interval between the samples in order to ensure consistency in sampling. We usually used the first collection of scrapes each month. Whenever collections for a specific day were visibly incomplete we chose the nearest day with larger collection of scrapes. Only where the number of scrapes was significantly lower than the trend of the growing market would have suggested, it was possible to identify such incompleteness.

Following the identification of the samples, we started categorising relevant data from Tochka and Dream Market. For this we identified the following categories:

(1) The overview page of the market, discussion threads and forums implemented in the markets that address updates of the market features: Observing how the security features, visualisation of product offers, structure of product categories, functionalities such as search or bitcoin exchange rate feed, and visualisation of the market platform develop allowed us to control for influences on pricing through developments of the market itself.

(2) Product Description: From the product description we derive information about the quality, quantity, price and shipping of the product.

(3) Product Images: We analysed the product images in order to verify how vendors present their offers visually, how the visual product placement evolves and if it relates to the pricing.

(4) Vendor Description: We considered the vendor description to control for the influence the information the vendors presents about themselves has on the price development of the product. Vendor descriptions regularly include information to signal product quality and trustworthiness of the vendor.

Once categorised we created a time-chart for vendors who sell drugs in the categories Cannabis and Psychedelics. In this time-chart we recorded the appearance of all vendors of a given market in the sampled months. This allowed us to keep track of the general movement of the vending

market population. It provided an overview firstly, about the duration vendors remain on the market, secondly, about influx, leaving and recurring sellers.

Within the completed time-chart we focused on the cannabis and psychedelics since those product groups are the most traded on both markets –also amongst the top selling products and together with MDMA and stimulants (Soska and Christin, 2015: 1). We distinguished between vendors selling only cannabis (C) or psychedelics (P) and the ones selling both (CP). For the new Tochka market we identified three vendors – two in the category of cannabis and one in psychedelic - selling goods for more than one month and, thus, qualified for longitudinal comparison. In Dream Market the situation for choosing was different. Since 175 vendors appeared more than once on the market, we introduced a threshold of a minimum of 10 occurrences. This reduced the number of vendors to four with three CP vendors and one C vendor. From them we chose the products that were offered for the longest. Thereby, we discerned a total of 15 cases; three psychedelics and six cannabis in Dream Market as well as four psychedelics and two cannabis in Tochka.

We quantitatively and qualitatively analysed these 15 cases. Firstly, we calculated the changes in prices and juxtaposed them with change in BTC over the observed period. Hereby, we also considered the fluctuation in the number of vendors on each market. Secondly, further qualitative analysis helped us to examine possible visual and textual factors which might relate to a change in price. For this we examined the product descriptions and product photos from the monthly scrapes for each of the 15 cases.

## **Results**

One of the prerequisites for a successful market are reasonably predictable prices for buyer and seller. It would not do to buy a product on a shopping website and find the price had changed between putting it in your basket and getting to the checkout, or afterwards. However, this is a problem faced by users of cryptomarkets due to the unpredictable fluctuations in currency values. The cryptomarket

infrastructure is designed to cope with this challenge through automatic pricing mechanisms. On the Darknet Market nominal product prices change constantly. BTC has a highly volatile exchange rate with fiat currencies like the dollar, euro and pound sterling. Experiencing a general decrease in value since the closure of Silk Road 1, BTC continued to lose overall value before becoming more stagnant in the period between January 2014 and July 2015. Yet, the currency was still volatile with possible changes around \$10 (per Bitcoin) in 24 hours which does not translate into a significant change in the price of a product (Coindesk 2016). This idiosyncratic feature needs to be accounted for when exploring pricing strategies and elicits the examination of the adaptability of nominal prices to changes of the value of BTC. Juxtaposing prices and the BTC exchange rate for each sampled case, followed by calculating the changes of both, showed that prices respond to changes in the exchange rate. Increases in the value of BTC led in most cases to a decrease of the product price and vice versa. This relationship concurs with basic microeconomic principles on nominal product prices. The few exceptions, which could be traced back to special strategies such as discounts or the use of holding price.

This process of adaptation is usually not a manual task for each vendor. In order to understand how this is done we shall briefly and in a simplified form outline the mechanism. Usually, the administrator of a market writes a small programme – “script” – which connects the prices of products to the BTC exchange rate. The market is basically an onion site (the visual “platform”) which is connected to a database, for example SQL. This database stores mainly all product offers and vendor profiles. The product offers include the price. The scripts allow the communication between the visual surface (the website) and the information that lies on the database. Such scripts are managed by the administrator and aim at the improvement of visual, structural and security features. This also encompasses the process for the automatic adjustment of prices. Hereby the script connects the price information stored on the database – and displayed on the website – with the BTC exchange rate. Consequently, variations in the exchange rate trigger a change in the price of the products. Our findings support this feature. The price of different products and different sellers respond to changes in the BTC exchange rate with only minimal variations across different products and sellers of one market.

Although prices changed mostly in a logical direction, i.e. to compensate for the change in the BTC exchange rate, they never counterbalanced it perfectly. Interestingly, most changes led to an increase in the real price of the product. Hereby we distinguished between responses to decreases in the BTC exchange rate on the one hand, and increases on the other. We identified much more cases of a decreasing BTC exchange rate. This conforms to the overall decrease of the BTC during that period. This which might have permitted a more nuanced mean. The responses in Tochka affirm this trend.. We encountered only once exception of a twofold increase e in price. The vendor, however, took the product off the market three days later and, therefore, leads us to assume that it was the application of a holding price (Soska and Christin, 2015). Other things being equal, the bottom line is a predominantly continuous increase in the real price of the product. This may indicate a general increase in demand, given that in the period of observation the number of vendors was generally increasing on both markets. Thus, the vendors might see an increasing customer base and repeat buyers thanks to nurturing loyalty through the substantive information they provide in their offers (Décary-Héту and Quessy-Doré, 2017).

T An increasing number of vendors selling their products within the same category – cannabis and / or psychedelics – suggesting increasing competition. By tracing the fluctuation, vendors for both markets displayed no clear pattern in the beginning months but consolidated to a more stable increase towards the end. The total number of drug products for both markets fluctuated in a vaguely similar pattern as the number of vendors. This weak relationship could be based on a simultaneous expansion or reduction of the offered product range of individual vendors. However, important to note here is that neither volatility of the amount of offered products nor of the number of vendors of psychedelics and cannabis seem to affect the constantly increasing real price. The alternative explanation would lie in a demand increasing in a way as to reflect the constant increase in price. Yet, this seem very unlikely because, as Soska and Christin (2015) demonstrate, demand also underlies a volatility which is affected for instance by changing situation of risk, such as major LE operations aimed at cryptomarkets.

Subsequentlye turned our analysis to the relationship there is between vendor and buyer, and the vendor's position in the markets. In order to explore how this relationship is signalled, we

investigated the product photos product descriptions, and vendor descriptions as well as enhancements and visible updates of the market. We shall emphasise at this point again that we were most concerned with changes in those factors which would enable an explanation of the change in real prices.

For selling their products, vendors in business-to-consumer e-commerce are interested in consumer acceptance of the markets resulting in an increase of demand and potential for trust-conferring feedback. Since this has the potential to affect changes in price it is important to consider when examining pricing patterns. There are two main perspectives for this: the technological-perspective focusing on potential of technological advancement to attract consumers and the consumer-focused perspective which addresses in its core customers' beliefs and experience through the eyes of a customer (Chen et al, 2002). Particularly for cryptomarkets, the attractiveness of the market ensured through technological features does not only facilitate transparency of the product quality and shipping but especially anonymity and security plays a crucial role.

With this in mind we looked at the visible updates of the market. However, over the period of observation Dream Market made seemed to have been working on security issues. Some updates which aimed to integrate visual element were made at a later point which lies outside the determined time frame. For product photos, there is a tendency of using random images from the internet that represent the nature of the product. However, within the categories of cannabis and psychedelics there are some products with visual quality features more adequate to display then for others. LSD and NBome, for instance, are much less displayed as the form they are delivered (liquid, blotter, etc.) than Magic Mushrooms and DMT. For products that did not avail themselves for visualisation images from the internet were used representing more the "spirit" of the drug rather its nature. For example, one vendor used as product photo a very colourful adaptation of a portrait photo of Albert Hofmann, a popular pioneer on the scientific research of psychedelic substances. The reason for not taking one's own photos is to minimise traceability for Law Enforcement and, thus, to increase vendor's anonymity outside the Dark Net Market. The use of personal photos suggests that a vendor might reckon that the benefits for sales – or at least the expectations for enhancing the sales volume –

outweighs this additional risk they take by using personal photos. Using one's own photos tends to signify authenticity and a greater commitment to the market by the vendor. In fact, there is a discernible trend to create some product branding by visually embedding the vendor's name in the product photos. The additional personalisation of a product image by editing it aims at enhancing the recognition of the vendor's product offers. But precisely for the value of recognition further changes happen rarely. Over the period of observation for all 15 cases the product image remained unchanged.

Also the product description offers fundamental information for buyer. It is the textual means for the vendors to signal quality of product and shipping. Besides shipping conditions some vendors offer compensation for intercepted packages which could be understood as a form of warranty. In case of dissatisfaction many vendors appeal in the product description to get in touch first before giving feedback. Thereby, they seek to bilaterally settle the query first. Direct indications about the quality of the product can look like the following about a cannabis product on Dream Market: 'Organic greenhouse BC Bud, winner of the 1st High Life Cup in Barcelona [...]'. This addresses the origin of the product and wider reputable acknowledgement as two crucial factors indicating high quality (Décary-Hétu and Quessy-Doré, 2017; von der Gouwe et al 2017). In the period of observation, none of the product descriptions of the 15 cases did show alterations.

A crucial quality signifier is feedback vendor receive from buyers based on the bought product (Bancroft & Scott Reid, 2016; Dellarocas, 2000). This encompasses the entire experience of the exchange – from shipping, support to consumption. Feedback on quality, as Bancroft and Scott Reid illustrate, is intimately intertwined with reliability and predictability which positively affects harm reduction and trust (Bancroft & Scott Reid, 2016). This affects sales and consequently may inform pricing. Unlike the product description the amount of feedback does not stagnate in any of our cases. However, feedback increases irregularly. We found that for some products no feedback is added over several months, while others receive additional feedback more continuously. Whilst prices rise nonetheless, a clear causal relationship between the variations in the real prices of the products and feedback is not identifiable. We assert that there is a bidirectional relationship. Vendors structure price

and discounts to encourage feedback. And feedback in combination with signals of commitment and authenticity inform pricing.

## **Discussion**

We approach pricing of illicit drugs in the cryptomarkets as a skilled, socially located activity. It does not simply reflect a balance between supply and demand.

Looking closely into price behavior for 15 different drugs over several months, our research shows that drug prices on cryptomarkets do not change merely because of variations in supply, demand or competition. Thus, we join existing research with the aim to uncover and explore the social and institutional complexities of the drug price. For instance, a change in price could be explained by an announcement of a special temporary discount used to augment the sales volume for a specific product. The use of such a pricing strategy can usually be traced through a corresponding amendment of the product description for the specific product. Alterations in the value of BTC trigger price adaptation. This is not addressed at the individual vendor level but rather at the market level. By use of technical knowhow that administrators deploy functions for automatic price adaptation which aims at lowering the risk of selling product above or below value. This ties into debates on just prices (Elegido, 2015). Lowering this risk of unjust prices can prove fruitful for the consumers' positive attitude, and thus acceptance, towards the market (Chen et al., 2002). Furthermore, the fact that this is addressed on the market level reveals a sense of common interests shared amongst a broad variety of market participants which is taken up and implemented by a central authority.

We demonstrated that prices do not only counterbalance variations in the value of the cryptocurrency but constantly increase. Analysing this phenomenon we aimed to show that, beyond common marketing strategies such as discounts or special offers, not only a complex set of factors such as risk, trust and anonymity needs to be considered for pricing on cryptomarkets. Also the agency of the vendors and the direction they want to take the business in, where price works as a signal of a developing relationship between vendor and buyer, plays a significant role here.

This scrutiny of prices allowed us to reveal a more nuanced conceptualization of anonymity for vendors. Rather than being unknown, there is a persistence of online identity which is separate from the real world identity. The relationship of anonymity sits between vendor profile on the dark net and the human being behind. Between these knots, we argue that the need for anonymity is predominantly unidirectional, namely from the seller profile as virtual existence towards the seller as human being. This is to say that the profile, the means of encrypted communication, and the usage of cryptocurrencies for payment protects the identity of the human beings (Martin, 2014). Following the other direction, vendors to create and elaborate their virtual identity. The person behind the profile seeks to establish an identity on the market which allows him/her to raise awareness and enhance recognisability of his offered products. We contend that in combination with feedback, product description rating this identity is central to conveying trustworthiness, reliability and quality in an otherwise anonymous and competitive market environment (Bancroft, 2020). All factors that may positively nourish loyal customer-relationships (Décary-Hétu and Quessy-Doré, 2017). This identity presents a valuable asset for a successful market participation and adds a significant factor to consider when investigating pricing and the potential for harm reduction.

## **Conclusion**

Pricing is a function of economic considerations but also transcends them. Particularly for the trade of illicit drugs on cryptomarkets, the scrutiny of prices contributes to a more substantial understanding of the market ecosystem and how vendors deal with risk, trust and anonymity. We contend that our findings nurture a better grasp of the boundaries of cryptomarkets, the organisation of supply, and the 'normalization or everyday nature of low-level supply behaviors' (Chatwin & Potter, 2014). Furthermore, studies on price elasticity in illicit drug markets can throw up counter-intuitive findings such as consumption increasing with price for some users who are also dealers (Caulkins and Reuter 2006). From Moeller and Sandberg (2018) we learn a lot about drug dealer's perspectives and decisions on pricing in the street-market. Based on our findings we suggest to take a similar approach for



cryptomarket drug dealers whereby in-depth interviews would then allow to gain further insights into pricing on online drug markets. Thereby we could improve our understanding of the social and cultural complexity of the pricing of illicit drugs in online markets.

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### **Declaration of Interests**

There are not conflicts of interest for either author.

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